

Applicant: Petter Honkalampi et al.
Application No.: 10/535,431
Response to Office action mailed Apr. 25, 2008
Response filed July 17, 2008

Claim Listing

1–18. (cancelled)

19. (currently amended) A press section in a paper or board machine, comprising:
a first press nip arranged to dewater a web on a first side and a second side, the first press nip having at least ~~[[one]]~~ two first fabric loops which pass~~[[es]]~~ through the first press nip;
a second press nip separate from the first press nip, the second press nip following the first press nip and having at least one second fabric loop which passes through the second press nip;
a third press nip separate from the first press nip and the second press nip, the third press nip following the second press nip and having at least one third fabric loop which passes through the third press nip, wherein the at least ~~[[one]]~~ two first fabric loops do~~[[es]]~~ not pass through the second press nip or the third press nip;
wherein the at least one second fabric loop does not pass through the first press nip or the third press nip;
wherein the at least one third fabric loop does not pass through the first press nip or the second press nip,
wherein in the press section the transfer of the web is arranged as a closed draw along a substantially straight run through the press section, and the press section defines a running direction from the first press nip to the second press nip to the third press nip, in which direction the web travels through the press section;
wherein the at least one second fabric loop comprises only one water receiving fabric, said only one water receiving fabric arranged to dewater the web on the first side; and
wherein the at least one third fabric loop comprises only one water receiving fabric, said only one water receiving fabric arranged to dewater the web on the second side.

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20. (previously presented) The press section of claim 19, wherein the press section is arranged to be used at running speeds over 1800 m/min.

21. (previously presented) The press section of claim 19, wherein the press section is arranged to be used at running speeds over 2000 m/min.

22. (previously presented) The press section of claim 19, wherein the first press nip is formed between two rolls or between a roll and a press suction roll.

23. (previously presented) The press section of claim 19, wherein the first press nip is formed between a roll and an extended nip roll, or between a suction roll and an extended nip roll.

24. (previously presented) The press section of claim 19, wherein the first press nip, the second press nip, and the third press nip are all formed between a backing roll and an extended nip roll.

25. (previously presented) The press section of claim 19 wherein the second press nip includes a first smooth backing roll or a transfer belt on the second side of the web and the third press nip includes a second smooth backing roll or a transfer belt on the first side of the web so as to smooth the first side and the second side of the web.

26. (previously presented) The press section of claim 19, wherein the second press nip is an extended nip and the third press nip is a smoothing nip, and further comprising a fourth smoothing press nip following the third press nip.

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27. (previously presented) The press section of claim 19, wherein the first press nip, the second press nip, the third press nip and a fourth press nip in the press section are all formed between two rolls.

28. (previously presented) The press section of claim 25, wherein at least one of the first smooth backing roll and the second smooth backing roll is a press suction roll made of metal powder manufactured by a powder metallurgy process.

29. (previously presented) The press section of claim 19 wherein at least one of the first press nip, the second press nip, and the third press nip is formed by a press suction roll made of metal powder manufactured by a powder metallurgy process.

30. (previously presented) The press section of claim 19 wherein at least one of the first press nip, the second press nip, and the third press nip is formed by a press suction roll.

31. (previously presented) The press section of claim 19, wherein at least one nip in the press section following after the first press nip is an extended nip.

32. (previously presented) The press section of claim 19, wherein after the first press nip the web is arranged to be transferred from a surface of the first fabric loop forming an upper fabric onto a surface of the second fabric loop forming a lower fabric of the press section.

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33. (previously presented) The press section of claim 19, wherein the web has an upper surface and a lower surface and in the second press nip the at least one second fabric loop's one water receiving fabric is engaged with the lower surface of the web, and a smooth press roll or a smooth transfer belt is engaged with the upper surface of the web and in the third press nip the at least one third fabric loop's one water receiving fabric is engaged with the upper surface of the web, and a smooth press roll or a smooth transfer belt is engaged with the lower surface of the web.

34. (previously presented) The press section of claim, 19 wherein a last lower fabric loop of the press section is arranged to transfer the web in a closed draw onto a drying wire of a dryer section.

35. (previously presented) The press section of claim 19, wherein one of the press nips is a smoothing nip formed by a counter roll without a fabric and a large-sector press suction roll, said large-sector beginning before said one press nip and continuing after it, on which the web is arranged to follow the water receiving fabric that passes through said one press nip, from before said one press nip, while said water receiving fabric passes through said one press nip and after said one press nip.

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36. (currently amended) A press section in a paper or board machine, comprising:
a first press nip formed between a first roll and a second roll or press shoe, the first press nip having two water receiving fabric loops which pass through the first press nip with the web therebetween and are arranged to dewater a web on a first side and on a second side;
a second press nip formed between a first roll and a second roll or press shoe, the second press nip following the first press nip, the second press nip having one and only one water receiving fabric loop, the fabric loop passing through the second press nip in contact with the first side of the web;
a third press nip formed between a first roll and a second roll or press shoe, the third press nip following the second press nip, the third press nip having one and only one water receiving fabric loop, the fabric loop passing through the third press nip in contact with the second side of the web;
wherein in the press section the transfer of the web is arranged as a closed draw along a substantially straight run through the press section, and the press section defines a running direction from the first press nip to the second press nip to the third press nip, in which direction the web travels through the press section; and
[[and]] wherein no fabric loop passes through more than one of the first, second, and third press nip.

37. (previously presented) The press section of claim 36 wherein the second press nip includes a first smooth backing roll or a transfer belt on the second side of the web and the third press nip includes a second smooth backing roll or a transfer belt on the first side of the web so as to smooth the first and second sides of the web.

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38. (previously presented) The press section of claim 36, wherein the second press nip is an extended nip and the third press nip is a smoothing nip, and further comprising a fourth smoothing press nip following the third press nip.

39. (previously presented) The press section of claim 37, wherein at least one of the first smooth backing roll and the second smooth backing roll, is a press suction roll made of metal powder manufactured by a powder metallurgy process.

40. (previously presented) The press section of claim 36 wherein at least one of the first press nip, the second press nip, and the third press nip, is formed by a press suction roll made of metal powder manufactured by a powder metallurgy process.

41. (previously presented) The press section of claim 36, wherein the web has an upper surface and a lower surface and in the second press nip the one water receiving fabric loop is engaged with the lower surface of the web, and a smooth press roll or a smooth transfer belt is engaged with the upper surface of the web, and in the third press nip the one water receiving fabric loop is engaged with the upper surface of the web, and a smooth press roll or a smooth transfer belt is engaged with the lower surface of the web.

42. (currently amended) The press section of claim 36, wherein one of the press nips is a smoothing nip formed by a counter roll not wrapped by a fabric and a ~~large-sector vacuum-sector~~ press suction roll having a large-sector vacuum sector, said large vacuum sector beginning before said one press nip and continuing after it, on which said large vacuum sector the web is arranged to follow the water receiving fabric that passes through said one press nip, from before said one press nip, while said water receiving fabric passes through said one press nip and after said one press nip.

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43. (previously presented) A method of pressing a paper web in a press section of a paper or board machine, comprising the steps of:

dewatering a web received from a forming section of the paper or board machine in a first press nip using two dewatering fabric loops which are passed through the first press nip with the paper web therebetween, to dewater the web on a first side and a second side:

dewatering the web received from the first press nip by using one and only one dewatering fabric loop which is passed through a second press nip engaged with the first side of the web to dewater the web on the first side, wherein the second press nip follows the first press nip;

dewatering the web received from the second press nip using one and only one dewatering fabric loop which is passed through a third press nip engaged with the second side of the web to dewater the web on the second side, wherein the third press nip follows the second press nip; and

transferring the web in a closed draw along a substantially straight run through the press section, wherein no fabric loop passes through more than one of the first, second, or third press nip.

44. (previously presented) The method of claim 43 wherein the second side of the web is smoothed by a smooth backing roll or a smooth transfer belt in the second press nip, and the first side of the web is smoothed by a smooth backing roll or a smooth transfer belt in the third press nip so as to smooth the first and second sides of the web.

45. (previously presented) The method of claim 43, wherein the web passes through an extended nip in the second press nip and the web passes through an extended nip in the third press nip, and then passes through a fourth smoothing nip.

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46. (previously presented) The method of claim 44, wherein at least one of the smooth backing rolls is manufactured by a powder metallurgy process.

47. (previously presented) The method of claim 43 wherein at least one of the first press nip, the second press nip, and the third press nip, is formed by a press suction roll manufactured by a powder metallurgy process.